AMERICAN ASTRONOMICAL SOCIETY

2000 Florida Avenue, N.W. + Suite 400 + Washington, D.C. 20009-1231
202-328-2010 + FAX: 202-234-2560 + aas@aas.org

Dr. Robert W. Milkey
Executive Officer

July 26, 1996

Final Technical Report for NASA Grant 2-699 entitled

HRMS Interdisciplinary Investigations; Search Strategy, Verification and Education

Principle Investigator Peter, B. Boyce, American Astronomical Society

This project had three goals:

1. To identify nearby stars which might inadvertently have been illuminated with the high power planetary radar beams from the earth. Such illumination can occur simply because the stars happened to be in the beam during a radar study of object within our solar system.

2. To help develop site-specific verification procedures to be used with NASA-funded searches for microwave signals from extraterrestrial intelligence (ETI).

3. To engage in and encourage volunteer efforts by Search for ETI (SETI) scientists participate in outreach efforts with the nation's schools, bringing the excitement of SETI into the classroom.

Owing to the premature cutoff of funding, this project was only partially completed.

Results from Part 1

In part 1, 64 solar system objects were investigated. Of those only one could have possibly been illuminated by the planetary radar from the Arecibo radio telescope, on July 4, 1968, before the telescope was transferred to the National Science Foundation. It was not possible to locate the Air Force records from that date. Consequently, we do not know if that star (RGO 241) might have a strong radar signal from Arecibo beaming toward it. In any event the star is 37.9 light years from earth. If such a signal was sent in 1968, and was picked up by a civilization on a planet around that star, and if they should reply, the earliest we could expect to receive a signal is early in the year 2044. This points up the great distances between the stars and the inter-generational nature of interstellar communications.

Results from Part 2

The second part of the project actually came to pass, but not under NASA funding. In part, because of the PI's work, the NASA HRMS (which later became the privately funded Project Phoenix) was able to design, build and deploy a robust system for immediate verification of signals. The verification system used subsidiary receivers on the main search telescope and on a second telescope. It was successfully incorporated into a privately funded search of nearby southern-hemisphere stars in 1995 from Parkes, Australia.

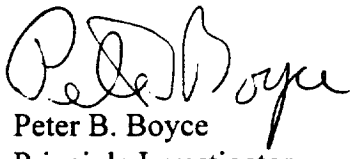
The PI used the last remaining funds from this project to participate in that search effort and to help test the verification system after installation. The verification system worked exceptionally well. Immediate re-observation from two telescopes showed that not one of the more than 16,000 candidate signals observed could have come another star. They were all caused by radio interference originating from the earth.

Results from Part 3

No work was done on the third part of this project, since the NASA funding was terminated before any searches had been done.

Under the auspices of this grant, the PI attended one meeting:
Bioastronomy IV, Santa Cruz, CA, August 1993

Respectfully Submitted,



Peter B. Boyce
Principle Investigator